

## **Preconditioning**

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Confusion exists when problems exist! There is confusion about the terms “preconditioning” or “backgrounding.” Some of the confusion is valid, whereas other aspects of the confusion have been generated by lack of information and a few other terms.

### **Definition**

“Condition” means to process, to prepare. “Pre” means before; before some event. “Precondition” means, in reference to cattle, going to the feedlot, to prepare them so they can best withstand the adjustment they undergo when they leave their point of origin to the feedlot. This, in general, refers to their first start—their origin, whether they are calves or older animals. It does not refer to the animal that has already moved into the channels of trade.

“Backgrounding” means processing the animal to best withstand the stresses of feedlot adaptation after leaving its point of origin and has entered the channels of trade.

Preconditioning is not new in that a number of cattlemen have been employing different procedures related to, or leading to, preconditioning for years.

### **Situation**

Accurate statistics are not available for morbidity and mortality figures on feedlot animals because such a reporting system does not exist. Accepted mortality losses throughout the nation indicate mortality figures of 1 to 2 percent of all calves (under 600 pounds) and 0.5 to 1 percent for yearlings (over 600 pounds). The losses suffered in moving cattle from where they are raised, or from their mothers, are estimated to amount to \$10 to \$20 for every animal. These losses are the total losses suffered from shrink; 5 to 8 percent is normal; many shrink up to 12 percent; death loss, 1 to 2 percent; treatment costs \$3 to \$5 per head; time in feedlot, extra days cost money; feed utilization sometimes increased 10 percent; and rate of gain often affected as much as 25 percent. Field testing indicates a high percent (up to 75 percent) of mature breeding animals throughout the nation have been

exposed to PI<sub>3</sub>, BVD and IBR. Further, some agents such as *Pasteurella spp* and possibly *Haemophilus somnus* are normal inhabitants of the bovine animal and become infectious when the animal is stressed.

Further, catastrophic losses occur in many feedlots where from 10 to 25 percent of the animals die. Those that do not die and end up as chronic cases, are also part of the losses.

Programs vary from area to area, but a 30-day program that is generally recommended is:

- a. Wean the calves—start on recommended ration.
- b. At the end of two weeks, when trough and bunk are adjusted, immunize according to the recommendations of the herd veterinarian.
- c. Wait one week and treat for grubs and worms.
- d. Load and move cattle carefully.

#### What Is Involved in Preconditioning?

Preconditioning is a management program. It involves weaning, feeding, vaccination, worming, external parasite control, and trough and bunk adjustment (total 30 day period). Safe and sane loading, rapid and careful transportation to the feedlot, and care in the feedlot for the first two weeks are all involved in preconditioning. Vaccination actually is a minor part of the program.

#### What Are The Problems In Preconditioning?

It is a new concept to many cow-calf men. They do not have the facilities and do not intend to build them.

On many cow-calf premises, the calves, when weaned, exhibit disease processes in the form of respiratory infections. Consequently, the cow-calf man prefers to ship the calves the day they are weaned to avoid this period of illness and losses.

Preconditioning costs money—\$10 to \$14 per animal. Costs involved include: feed costs 15-20 cents a day, yardage 5 cents a day; interest 3 cents a day; immunization-surgery-parasite control \$3-\$6; total of \$10 to \$14.50. The calf, when weaned, will shrink 5 to 8 percent. Fifty percent of this shrink will be gut shrink and will be restored within 5 to 6 days. The other shrink is tissue shrink and should be restored in 10 to 12 days after weaning. In most cases, under good management, the weaned calf will gain from 20 to 60 pounds in this 30-day period. This, in itself, will pay for the preconditioning costs.

Problems of vaccination, maternal antibody interference, interference due to multiple antigens, sick calves when vaccinated and improper administration of biologics have confused many producers that want specific uniform instructions for all groups of calves. This is impossible!

#### Benefits of Preconditioning

Preconditioning is an insurance program. No one can predetermine disease. No one can predict the stresses animals will be exposed to in

transit. Trials conducted where one-half of a group of calves are preconditioned and one-half left as controls, then exposed to the same environment where stresses are not measurable, are not meaningful. Frequently, none of the animals sicken, so naturally under these conditions preconditioning does not pay. It is extremely difficult to measure the incidence and amount of stress, nor can they measure the incidence and level of disease.

#### Progress Is Rated

Meaningful evaluations have evolved from the preconditioning program.

A high number (unestimable) of cow-calf men are preconditioning their calves. Most of these calves are going direct to the feedlots without any publicity. No exact numbers will ever be known. Further, there is evidence that a large number of these calves are only partially preconditioned—which is a “black” name to the program. Preconditioned calves must be “certified” by a certificate.

#### Truckers

The impact truckers have on the program is tremendous. Feeders are becoming more and more conscious of proper loading, handling and care and time in transit. Time clocks in trucks are becoming part of the essential equipment in handling cattle. However, a tremendous amount of research and education is needed in this area.

#### Nutrition

The entire role of nutrition in the processing of feedlot cattle is getting a new look. How soon should calves be weaned? Will the cow do better and raise a better calf next year on less feed if the early weaning is practiced? Is creep feeding profitable? How do you start a calf recently weaned on feed? What is the incidence of acidosis in recently weaned calves started on high-concentrate-low-roughage? How can they be weaned with the least amount of shrink? Many questions have been generated from the nutritional standpoint. Within the industry there are as many answers as questions on this subject.

#### Marketing

The entire aspect of intermingling calves, long waits in commission agents' yards, auction markets and terminal markets—“tourist calf”—is now under scrutiny. (The juggling of calves, shipping animals over several state lines without approval, lack of inspection when sick animals [subclinical] are mixed with “healthy” calves—animals going through several auction markets in a few weeks—are practices that have generalized the term “tourist” animal.)

In general there has been no uniform system of marketing, little regulation and yet a general acceptance of the fact that over 80 percent of animals cannot be traced to the point of origin. **Further, the complete absence of animal identification, except brands, still exists.** Little has been done on these matters since preconditioning started five

years ago. Until the industry itself asks for these important aspects of handling cattle, many of these “side benefits” will not come into being for some time.

In an overall view of the United States, preconditioning is a program with a great deal to offer to the cattle industry. It is a management program—a program aimed at pooling many resources to cut down on the losses to the cattle industry. The program has been parasitized and misconstrued by many groups. The auctioneer that yells “PC calves” for a group of calves that have only been vaccinated for Blackleg is not helping the program; nor is the producer that vaccinates his calves the day he weans and loads them, as he is still passing his trouble on to the feeder. Further, the feeder that buys preconditioned calves and mingles them with mixed groups, places them in uncomfortable lots, frequently placing them immediately on self-feeders, is not giving “PC calves” a fair chance.

In essence—

- a. The program is new and moving.
- b. Its value still needs documentation — and documentation does exist but is not put together to be identifiable.
- c. It is a management program—not a “needle” program.
- d. The feeder will determine the value of the program if he keeps records.

#### Signs of Progress

More and more producers are preconditioning animals and selling them direct to feeders without information or publicity. The feeder likes them and does not tell other feeders because of the possibilities of competitive improvement of cattle.

The tremendous increase in commercial *backgrounding* of cattle going to feedlots. Many commercial lots are in operation doing nothing but this type of endeavor.

Greater emphasis on the time animals are pooled by the commission man (over 25 hours is too long).

Greater emphasis on trucking cattle (over 25 hours is too long).

Greater emphasis on measuring disease effects. Feedlots are finding the direct and indirect effects of disease on profitability.

#### Questions Asked About Preconditioning

QUESTION: What is Preconditioning?

ANSWER: It is the preparation of a calf that has been nursing its mother to best withstand the stress of moving from point of origin to its destination and environmental adaptation.

QUESTION: What is backgrounding?

ANSWER: Backgrounding is the preparation and processing of cattle that have been removed from their dams for some time so they best withstand feedlot adaptation. Usually their origin and history is obscure.

QUESTION: What is the value of preconditioning?

ANSWER: To cut down on the losses experienced in moving cattle and getting them adapted to feedlot conditions. This encompasses weaning trough and bunk adjustment, shipment, shrink and treatment costs. It is estimated that shrink loss in feed utilization and rate of gain plus morbidity and mortality amounts to \$10-\$20 per animal going into feedlots.

QUESTION: What does it cost to precondition a calf?

ANSWER: Where records have been kept and a 30-day period was used to wean, start the animals on feed, vaccinate, worm, treat for external parasites and any other procedure necessary from \$10-\$14.

QUESTION: Will a calf gain during the preconditioning period?

ANSWER: Yes, if properly handled, weight gains from 20-60 pounds have been recorded.

QUESTION: Will preconditioned calves gain better than non-preconditioned calves?

ANSWER: Preconditioning is an insurance program; an attempt to process the animal so it can better withstand the transition from leaving its mother to entering the feedlot. If adversities strike the animals in this transition, preconditioned animals have a lower morbidity and mortality record. Preconditioning will not affect the genetic potential of a calf making it gain more or less in the feedlot.

QUESTION: At what age should the calves be vaccinated?

ANSWER: In some herds, the dams have been exposed to various diseases with the possibility of having maternal antibodies in their milk. They, when consumed by the calf, may exist for certain periods of time and thus may interfere with vaccination. In most cases if the calves are vaccinated near weaning time (6-7 months of age) or after weaning, there will be little maternal antibody interference.

QUESTION: How does a buyer know that animals have received all the inoculations indicated?

ANSWER: Preconditioning must be certified by a certificate, made out by a veterinarian, or they cannot be called "Preconditioned." Further, the animals must be identified.

QUESTION: How important is dehorning? How about tipping horns?

ANSWER: If not dehorned perhaps one should check with the buyer. Some may or may not discriminate against horned cattle.

QUESTION: When should I treat for grubs?

ANSWER: It is recommended that southern cattle be treated early, August to October, and midwestern and western cattle treated up to December 1st. After that period side reactions may be observed.

QUESTION: What is the value of fecal examination for worm eggs? Should we just routinely worm cattle?

ANSWER: Egg counts are not always reliable. Routine worming usually pays.

QUESTION: How much more should a feeder be willing to pay for preconditioned calves; e.g. 400 pounds (2, 3, 4 \$5/cwt)?

**ANSWER:** If ranchers can recover the cost through reduced shrink and/or increased selling price he may be more willing to cooperate. At this time preconditioned calves are selling for \$1-2 cwt more per cwt than non-preconditioned calves.

**QUESTION:** Should calves be given booster shots of some vaccines?

**ANSWER:** If vaccinated too young and maternal antibodies interfere, it might pay to give boosters. Some bacterins may not induce long-lasting protection. Boosters increase protection as much as 30-50 percent. In general, it is recommended that calves vaccinated under six months of age be revaccinated.

**QUESTION:** Should occasional losses of calves from BVD post-vaccinal reaction deter the use of the vaccine?

**ANSWER:** No. Such animals are usually immunologically incompetent for BVD-MD only. If such calves are exposed to field strains of the virus they would die anyway, so failure to vaccinate only postpones the inevitable. Why jeopardize the rest of the herd? Some feel that the decrease in weight gain and feed efficiency from sub-clinical disease may cost more than an occasional loss.

**QUESTION:** Will preconditioning be a guarantee against "shipping fever?"

**ANSWER:** No. Because: 1. All animals may not be immune. 2. Agents not vaccinated against, may cause respiratory disease. 3. No vaccination is available against stress or poor management.

**QUESTION:** Can more than one vaccine be administered at the same time?

**ANSWER:** Yes, although there are some exceptions: The administration of too many at one time may produce a strain on the animal's system to produce immune bodies.

**QUESTION:** If a calf is vaccinated, will the vaccine produce a disease in the calf's dam?

**ANSWER:** There is no documented evidence to prove that it does.

**QUESTION:** Should all calves be vaccinated for BVD?

**ANSWER:** Animals entering lots where BVD has been a problem should be vaccinated.

**QUESTION:** When should calves be wormed?

**ANSWER:** When they are wormy but the best time is after they have been weaned.

**QUESTION:** What wormer is best?

**ANSWER:** Tramisal, Thiobenzole and Phenathiazine are all recommended, but Phenothiazine should not be used with organic phosphates (used as grubicides).

**QUESTION:** What about vaccinating the calves, then turning them back with the cows for two weeks so they won't go into a slump?

**ANSWER:** This is not necessary. If the calves are weaned for two weeks and are starting to eat, then they can be vaccinated. Most calves

will shrink from 3-6 percent when weaned, yet will regain this weight in 10-12 days.

QUESTION: How should I start preconditioned calves on feed?

ANSWER: Remember they have tasted grain. They can easily develop acidosis as a result of a starvation period during transit and will engorge quickly. Start out on good roughage and slowly bring on the concentrates.

QUESTION: Will IBR and BVD vaccines given to pregnant cattle induce abortions?

ANSWER: Data is available and field experience suggests that any viral infection of the above agents, including modified vaccine virus, may at times induce abortion. Vaccine insert copy states that pregnant animals should not be vaccinated. State of gestation may affect incidence of abortion.

QUESTION: Should breeding bulls be vaccinated with MLV vaccine?

ANSWER: At this time, little is known regarding the harboring or shedding of virus via the semen.

QUESTION: At what age are bovines immunologically competent? To IBR, to BVD, to PI<sub>3</sub>?

ANSWER: No definite answer can be given as colostral antibody absorption is variable between animals and herds. Second doses of vaccine are recommended if initial vaccinations are made on animals under six months of age.

QUESTION: Do antigens in combination produce as good an antibody response as when given separately?

ANSWER: Combination vaccines licensed today have been required to furnish proof of equal response for each antigen as when given alone. Proof of non-interference of one antigen with another must also be proved on licensed combination products.

QUESTION: What are some conditions which may occasionally cause immunity failures?

ANSWER:

- a. Age of animal
- b. Disease status
- c. Nutritional deficiencies
- d. Passive immune status
- e. Stress
- f. Vaccine stresses
- g. Immuno-incompetence

QUESTION: Why is there lack of agreement over the type of functional antibody in IBR, PI<sub>3</sub> & BVD?

ANSWER: The relationship between local or secretory vs. serum or circulatory antibody are not completely understood for many disease conditions. Antibody fractionation plus further work on functional or protective antibody should clear up many present voids.

**QUESTION:** What is the real economic significance of *Haemophilus somnus* in bovine septicemias?

**ANSWER:** The organism causes a vasculitis and appears as a possible etiologic agent in some feedlot respiratory problems, as well as the classical thrombo-embolic meningoencephalomyelitis.

**QUESTION:** Can one determine whether a virus isolate is MLV or virulent virus?

**ANSWER:** Not in cell culture system. Animal inoculation may help to designate virulence.

**Further References on the Lack of  
Transmission of PI<sub>3</sub>, IBR and/or BVD  
Viruses to Non-vaccinated Animals**

1. Combination Vaccines for Control of Bovine Respiratory Diseases. *J. L. Bittle and C. J. York*, J.A.V.M.A. 152: 889-893 (1968). – 2. Immunogenicity of Two Infectious Bovine Rhinotracheitis Vaccines. *F. Zuscsek and T. L. Chow*, J.A.V.M.A. 139: 236-237 (1961). – 3. Complications Following Vaccination of Cattle Against Infectious Bovine Rhinotracheitis, Bovine Viral Diarrhea-Mucosal Disease and Parainfluenza Type 3. *S. F. Rosner*, J.A.V.M.A. 152: 898-902 (1968). – 4. Bovine Parainfluenza 3 Vaccine Studies. *J. Thorsen, R. Sanderson and J. Bittle*, Can. J. Comp. Med. 33: 105-107 (1969).

**Suggested References on Preconditioning**

1. Preconditioning Seminar, Oklahoma State University, September, 1967. – 2. Preconditioning Seminar, University of Wyoming, June, 1968. – 3. Livestock Conservation Incorporated, Annual Meeting Proceedings, 1971, Waterloo, Iowa.

# In·ter·fer·on (In'tər·fir'on), n.

A non-specific viral inhibitor released by cells under viral attack, rendering surrounding cells incapable of supporting virus replication. This refractory state applies not only to the attacking virus, but to many other interferon-sensitive viruses as well.

# Na·sal·gen IP (Nā'zəl·jen IP)

The first vaccine ever shown to stimulate high levels of interferon in respiratory secretions. This specially attenuated intranasal IBR/PI-3 vaccine affords protection within 40 to 72 hours post-vaccination.

## NASALGEN IP ACTIVATES THREE LINES OF DEFENSE TO PROTECT CATTLE

**Interferon:** Resistance to virus infection within 40 to 72 hours coincides directly with the time high levels of interferon appear in respiratory secretions.

**Secretory antibodies:** neutralize invading virus before they can infect the intact epithelium.

**Circulatory antibodies:** at levels more than two times higher than those produced by intramuscular vaccines, thus affording greater assurance of protection.

### NON-ABORTIGENIC

It is the only modified live virus IBR/PI-3 vaccine approved for use in pregnant cows. There is no fear of abortion

when vaccinated calves are running with pregnant mother cows.

### NEW BORN CALF PROTECTION

Because Nasalgen IP is safe to use in pregnant cows, they can be vaccinated in the last three months of pregnancy. Cows become hyperimmune and high levels of antibodies are passed to the calf in the colostrum, providing enhanced passive IBR protection for the calf.

**Regardless of the type of cattle operations your clients have—feedlot, cow/calf, or dairy—Nasalgen IP will best fit their vaccination programs.**

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